



7 Watt P1dB, 8.5 GHz to 11 GHz, High Power Amplifier,  
SMA, 30 dB Gain, 46 dBm IP3, 5 dB NF

## TECHNICAL DATA SHEET

PE15A5043

The PE15A5043 is a coaxial power amplifier operating in the 8.5 to 11.0 GHz frequency range. The amplifier offers 38.5 dBm typ of P1dB power and a high 30 dB min small signal gain with the gain flatness of  $\pm 0.75$  dB typ. Input/output ports are matched for 50 ohms and are AC coupled. The amplifier requires typically a +12V DC power supply. The connectorized SMA module is unconditionally stable and operates over the temperature range of  $-30^{\circ}\text{C}$  and  $+60^{\circ}\text{C}$ . A heatsink is required for proper operation.

### Features

- 8.5 to 11.0 GHz Frequency Range
- P1dB 38.5 dBm typ
- Small Signal Gain: 30 dB min
- Gain Flatness  $\pm 0.75$  dB typ
- 50 Ohms Input and Output Matched
- Unconditionally Stable
- Regulated Supply

### Applications

- Military Radio
- Communication Systems
- High Gain Driver Power Amplifier
- High Gain Output Power Amplifier

**Electrical Specifications** (TA =  $+25^{\circ}\text{C}$ , DC Voltage = 12Volts, DC Current = 7.5A)

Description	Minimum	Typical	Maximum	Units
Frequency Range	8.5		11	GHz
Small Signal Gain	30			dB
Gain Flatness		$\pm 0.75$	$\pm 1.25$	dB
Input Power (CW)			+17	dBm
Output Power at 1 dB Compression Point	+38	+38.5		dBm
Output 3rd Intercept Point	+45	+46		dBm
Noise Figure		5		dB
Impedance (Input)		50		Ohms
Impedance (Output)		50		Ohms
Input VSWR		1.8:1	2:1	
Output VSWR		1.8:1	2:1	
Operating DC Voltage		12		Volts
Operating DC Current **		7.5		A
Quiescent Current		11		A
Operating Temperature Range	-30		+60	$^{\circ}\text{C}$

\*\*Design will require a start-up current of 25% to 50% higher. Please insure DC power Supply is rated for up to 11.5 amps.

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [7 Watt P1dB, 8.5 GHz to 11 GHz, High Power Amplifier, SMA, 30 dB Gain, 46 dBm IP3, 5 dB NF PE15A5043](#)

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PE15A5043

### Absolute Maximum Rating

Parameter	Rating	Units
Source Voltage	+15	Volts
RF input Power	+17	dBm
Operating Temperature (base-plate)	-30 - +70	°C
Storage Temperature	-55 - +85	°C



ESD Sensitive Material,  
Transport material in  
Approved ESD bags.  
Handle only in approved  
ESD Workstation.

### Mechanical Specifications

#### Size

Length	3.87 in [98.3 mm]
Width	3.64 in [92.46 mm]
Height	0.67 in [17.02 mm]
Weight	0.754 lbs [342.01 g]
Input Connector	SMA Female
Output Connector	SMA Female

### Environmental Specifications

#### Temperature

Operating Range	-30 to +60 deg C
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### Compliance Certifications (see [product page](#) for current document)

### Plotted and Other Data

#### Notes:

- Values at +25 °C, sea level
- ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation.
- Heat Sink Required for Proper Operation, Unit is cooled by conduction to heat sink.



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### Amplifier Power-up Precautions

- 1.) Confirm that proper ESD precautions and controls are always in place before handling any Amplifier module.
- 2.) Confirm adequate thermal management is in place to effectively dissipate heat away from the Amplifier package. The Amplifier operational baseplate temperature must be within the operational temperature range stated in the Amplifier datasheet. Depending on the design and thermal requirements, using a heatsink with cooling fan is always recommended for safe reliable operation. A heat sink without a cooling fan may also be used. Damage caused from overheating will void the warranty.
- 3.) Confirm adequate system grounding is established. The DC power supply and Amplifier must have a common ground in order to operate properly.
- 4.) Power Amplifiers may require additional DC Current when initially powered-up. Depending on the design, the input current draw could range from an additional 10% to 100% above the maximum rated DC current of the Amplifier. This varies based on product part number.
- 5.) Confirm the DC power supply, if limited, is set to allow for additional start-up current that's rated for the Power Amplifier.
- 6.) Confirm the system is designed and calibrated for 50 ohms. Any impedance mismatch may cause performance issues.
- 7.) Perform a CALIBRATION (if required) with the loads before connecting the Amplifier to the Network Analyzer to ensure proper performance.
- 8.) Use a fixed attenuator between the signal source and input port of the Amplifier to optimize the input VSWR match.
- 9.) Confirm the input power level at the input port of the amplifier does not exceed the maximum rated limit for input power (as stated in the Amplifier datasheet).  
 $P_{in}$  for Small Signal Gain = P1dB-SSG-10 dB  
 $P_{in}$  for P1dB = P1dB-SSG+1 dB
- 10.) Confirm the Network Analyzer is always connected to the Amplifier first before DC power is applied to the Amplifier.
- 11.) As long as the input and output ports of the amplifier are connected to a 50Ohm load and RF signal power is applied, the Amplifier can be powered up with DC voltage.
- 12.) Confirm the Amplifier output load is matched for a 50 Ohm impedance and will not exceed the maximum rated VSWR or Return Loss limit for the Amplifier. Exceeding the maximum rated VSWR or Return Loss limit will result in reflected signal power that could damage the Amplifier and void the warranty.
- 13.) **Power Amplifier connected to an Antenna for signal transmission** - It's strongly recommended to use a high power fixed attenuator pad or an Isolator between the output port of the Amplifier and input port to the antenna. Any reflected signal power due to impedance mismatch will likely damage the Amplifier and void the warranty.
- 14.) The attenuator or isolator used at the output port of the Amplifier must be rated to handle the output power level and operational frequency band of the amplifier.

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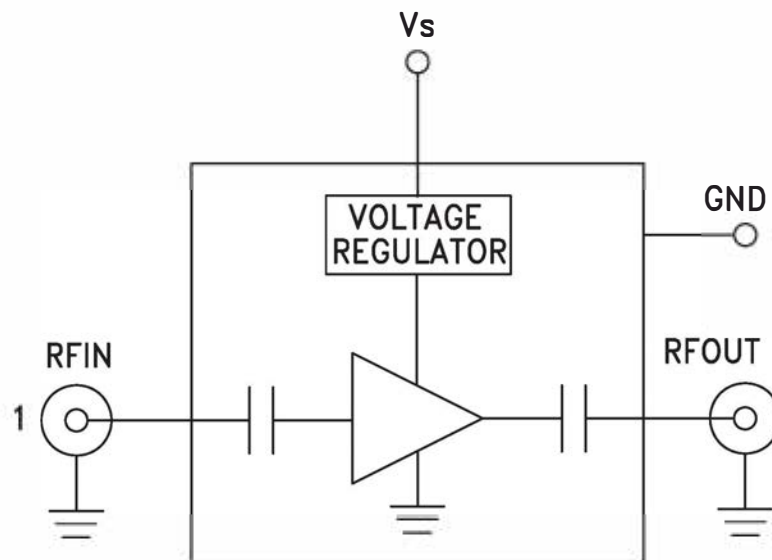
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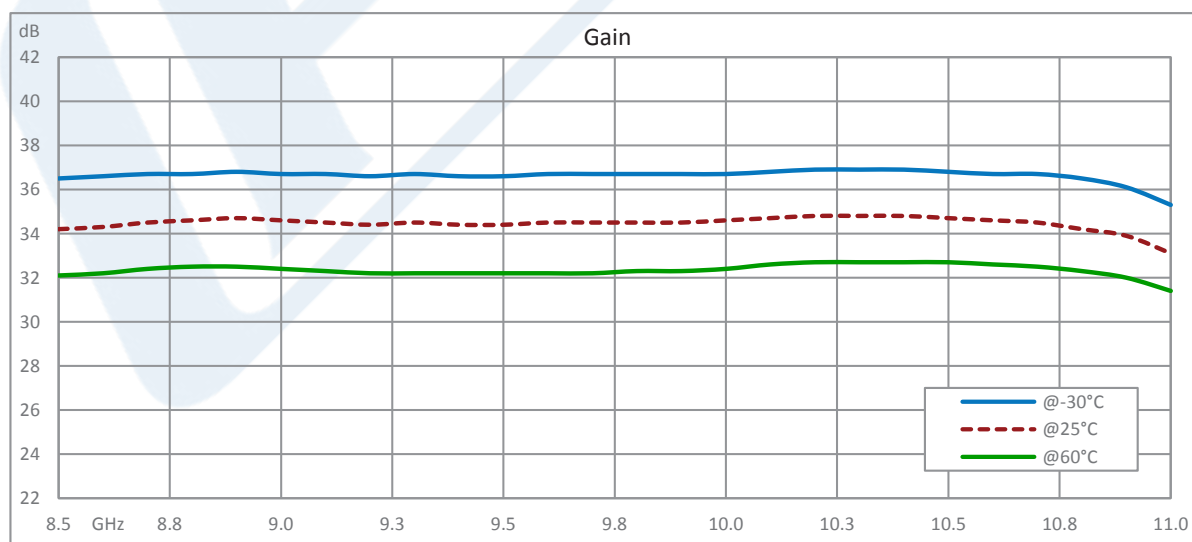
## TECHNICAL DATA SHEET

PE15A5043

### Functional Block Diagram



### Typical Performance Data



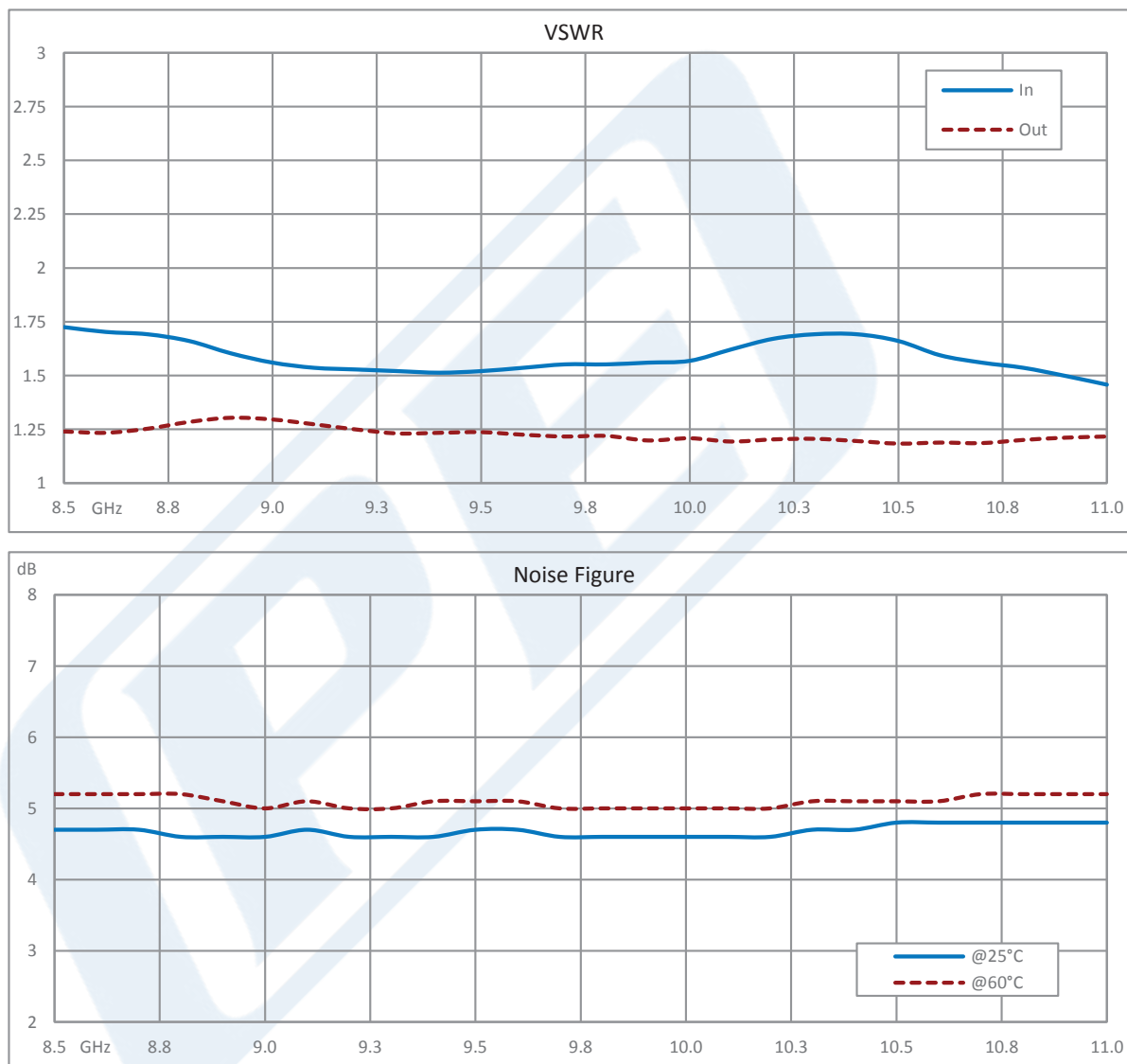
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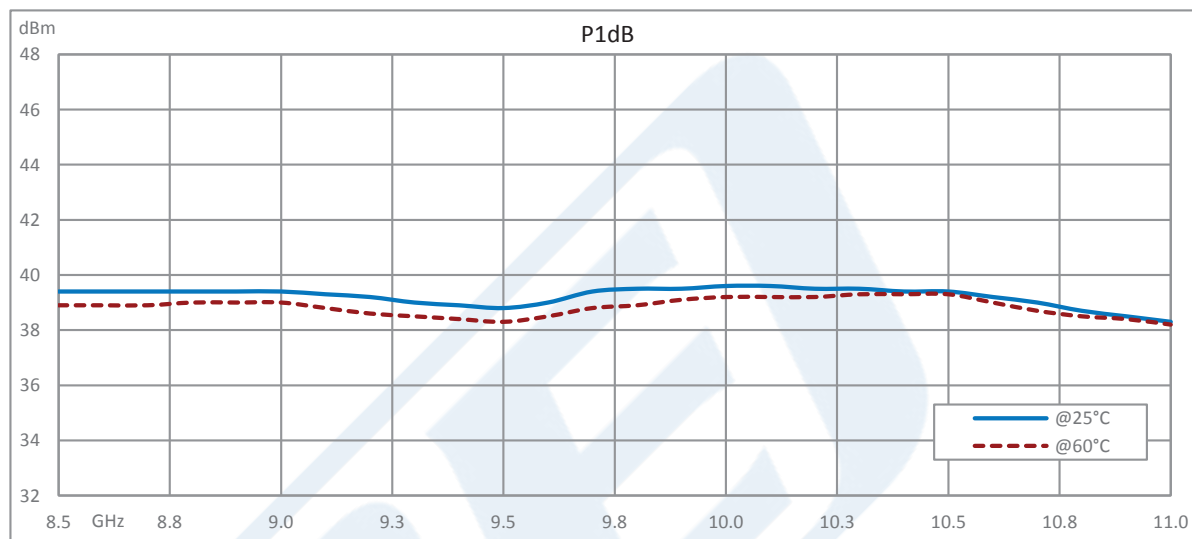
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URL: <https://www.pasternack.com/11-ghz-high-power-amplifier-30-db-gain-ip3-sma-pe15a5043-p.aspx>

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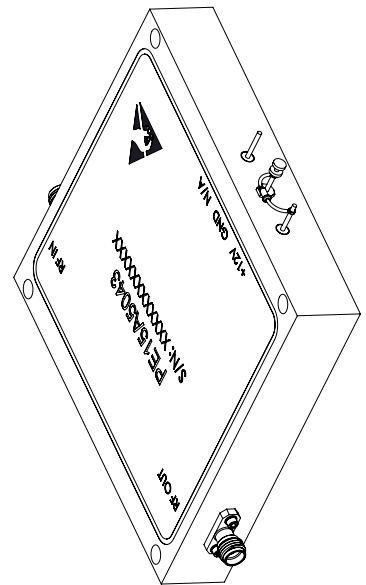
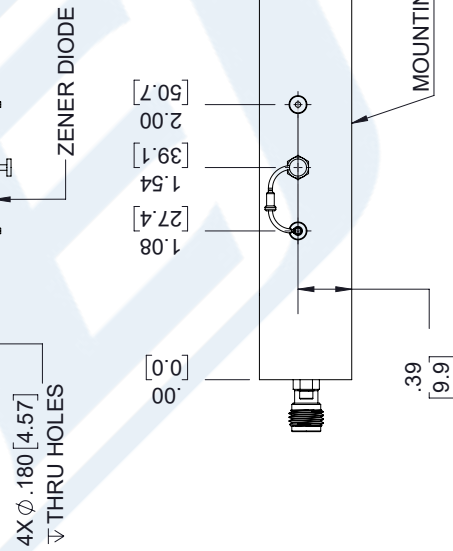
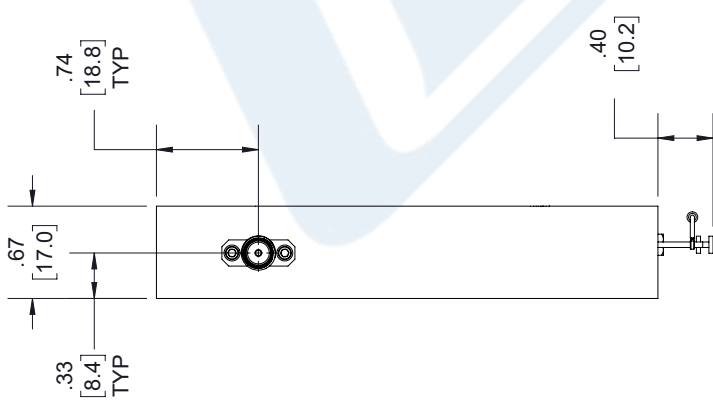
Technical drawing of the PE15A5043 module. The drawing shows the module with its dimensions and labels. The dimensions are:

- Overall width: 3.87 [98.3]
- Overall height: 3.35 [85.1]
- Distance from top edge to RF IN connector: 3.40 [86.4]
- Distance from top edge to RF OUT connector: 3.64 [92.5]

The module is labeled with:

- RF IN
- RF OUT
- PE15A5043
- S/N: XXXXXXXXXXXXX
- +12V GND N/A
- A warning symbol (triangle with exclamation mark and lightning bolt)

The module is connected to a 2X SMA FEMALE connector.



UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [ ] ARE MILLIMETERS				<div> <b>PASTERNAK</b> an INFINITE® brand</div> <div>Pasterneck Enterprises, Inc. P.O.Box 16759, Irvine, CA 92623. Phone: 1.949.261.1920   1.866.727.8376 Fax: 1.949.261.7451 www.pasterneck.com   e-mail: sales@pasterneck.com</div>				THE INFORMATION AND DESIGN IN THIS DOCUMENT IS THE PROPERTY OF PASTERNAK CORPORATION. ALL RIGHTS RESERVED.					
TOLERANCES: X±.2    2 [ .008 ]    FRACTIONS XX±.01 [ .25 ]    ±1/32 XXX±.005 [ .13 ]    ANGLES ± 1°				SHEET    1    OF    1				SCALE					
ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.				N/A									
THIRD-ANGLE PROJECTION <div></div>				SIZE A		T/CAGE 53919		DRAWN BY K.DANG		PART NUMBER PE 15A5043		REV 1.2	

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